

Two newly detected bark and ambrosia beetles from southern Florida (Coleoptera: Curculionidae, Scolytinae)

THOMAS H. ATKINSON¹, ROBERT J. RABAGLIA² & ANTHONY I. COGNATO³

¹5005 Red Bluff Road Austin, TX 78702. E-mail: thatkinson@pestmanagementresearch.com

²USDA Forest Service, Forest Health Protection, 1601 N Kent St, RPC-7 Arlington, VA 22209

³Department of Entomology, Michigan State University, 243 Natural Science Bldg. East Lansing, MI 48824

Abstract

Coptoborus pseudotenuis (Schedl) and *Cryptocarenum diadematus* Eggers, two species of Neotropical Scolytinae, are reported from Florida and the U.S. for the first time. This is the first report of the genus *Coptoborus* from the U.S. We provide descriptions, figures, distribution maps and keys.

Specimens collected in southern Florida of *Coptoborus pseudotenuis* (Schedl) and *Cryptocarenum diadematus* Eggers were recently found in Florida State Collection of Arthropods and via the USDA Forest Service survey for non-native scolytines (Rabaglia *et al.* 2008). These widespread Neotropical species of Scolytinae have not been reported previously from the United States.

At first glance, these would appear to be two more entries on the growing list of introduced exotic bark and ambrosia beetles detected in the U.S. (Haack 2006, Rabaglia *et al.* 2006). While it is possible that they have been introduced, it is also just as plausible that they have been present for much longer or might even occur in southern Florida naturally (i.e., without any human intervention: *sensu* Atkinson and Peck 1994). Most species of Scolytinae are very small (< 2mm), not attracted to light traps and seldom collected outside their host plants. Consequently, most species are rarely collected and it is possible that these two species have been overlooked until now. As an example, Peck (1989) was the first to use flight intercept traps extensively in southern Florida, resulting in detection of several undescribed species, numerous new records from Florida, as well as the first records in over 100 years of some uncommonly collected species (Atkinson *et al.* 1991, Atkinson and Peck. 1994). Recent USDA Forest Service and APHIS programs to detect non-native bark and ambrosia beetles utilizing funnel traps baited with ethanol or pheromone lures (Rabaglia *et al.* 2008) are accelerating the discovery of new records and range extensions of seldom collected native species (unpublished observations). In summary, whether or not these are recent introductions can probably not be resolved at this time.

The following abbreviations are used for museums where specimens are deposited: FSCA (Florida State Collection of Arthropods), MSUC (Michigan State University Collection).

Coptoborus pseudotenuis (Schedl) (Figs. 1–4)

Xyleborus pseudotenuis Schedl 1936: 109

Xyleborus tenuis Schedl 1948: 269 (Synonymy: Wood 1976a)

Diagnosis. This small xyleborine ambrosia beetle is most easily distinguished from relatives found in the U.S. by the elytra which are tapered posteriorly (Figs. 3, 4). The presence of 2 sutures on the posterior face of the

antennal club is diagnostic and is shared only with *Theoborus* and *Dryocoetoides* (Atkinson, 2009) among genera known from the U.S. The genus *Coptoborus* (Hulcr *et al.* 2007) includes 10 Neotropical species, of which *C. pseudotenuis* is the most widely distributed (Fig. 5). This species is a polyphagous inbreeding ambrosia beetle.



FIGURES 1–4. *Coptoborus pseudotenuis* female. 1. Lateral view. 2. Head and frons. 3. Dorsal view. 4. Declivity.

Description. Female: 1.8–2.2 mm long, 2.9 times as long as wide. Color yellowish brown. Frons convex, surface reticulate, shining. Punctures in central area between eyes sparse, shallow. Frontal vestiture of fine, sparse setae, most abundant near epistomal margin. First segment of antenna corneous, occupying less than 1/3 of club; 2nd and 3rd segments pubescent. Antennal sutures almost straight, slightly recurved. Pronotum 1.16 times as long as wide, anterior margin rounded, unarmed. Summit in middle of pronotum. Anterior asperities low, less pronounced in postero-lateral areas, forming triangular area. Disc smooth, shining, punctures shallow. Elytra 1.6 times as long as pronotum. Sides parallel on basal 2/3, tapering to approximately 1/3 of maximum width at narrowly rounded apex. Striae not impressed, punctures small. Interstriae nearly flat, shining on disc and declivity, 3–4 times as wide as striae. Vestiture of erect, uniseriate interstitial setae and recumbent strial setae, becoming more abundant posteriorly and on declivity. Declivity gradual, convex in profile, conspicuously narrowed behind in dorsal view. Interstria 2 slightly impressed, 1 and 3 with 3–5 small granules or denticles. Apical margin of interstriae 1–2 elevated, with 1–3 small granules.

Male: not known.

Distribution. Florida: Broward Co., Ft. Lauderdale, IFAS Research & Education Center, 6–V–2004, ex *Delonix regia* “with fungus”, S. Ortiz (1, FSCA). The single specimen was reared out along with several other species of ambrosia beetles (*Theoborus ricini* (Eggers), *Euwallacea fornicatus* (Eichhoff), *Ambrosiodmus lecontei* Hopkins, *Premnobius cavipennis* Eichhoff, and *Xyleborus ferrugineus* (F.)). Florida: Palm Beach Co.,

West Palm Beach, Winding Waters Natural Area, 30–IV–2008, Lindgren funnel trap baited with ethanol lure, B. Mayfield (1, MSUC). This species is known from lowland areas of Mexico, Costa Rica, Panama, Venezuela and Brazil.

The following modified key to genera of Xyleborina of the U. S. is based on Rabaglia *et al.* (2006). In addition to *Coptoborus*, three genera are added to the key: *Anisandrus*, following resurrection of the genus for several native and exotic species (Hulcr *et al.* 2007) plus newly detected exotic species (Rabaglia *et al.* 2009); *Ambrosiophilus*, a new genus for certain previously established exotic species (Hulcr and Cognato, 2009); and *Dryocoetoides*, to include a new species for Florida (Atkinson, 2009).

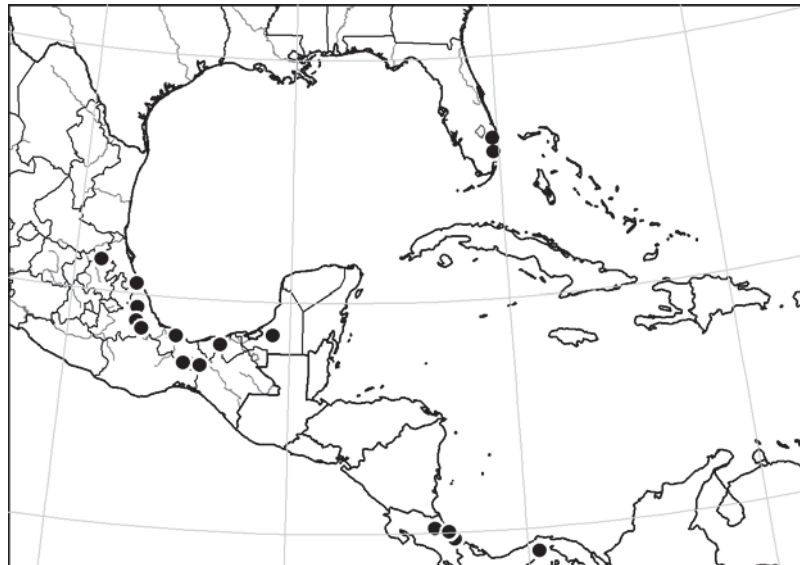


FIGURE 5. Known collection localities for *Coptoborus pseudotenuis* in the Caribbean Basin. Also known from Brazil (Wood and Bright 1992a).

Key to Genera of Female American Xyleborina North of Mexico

1. Antennal club strongly flattened, basal corneous area small, its margin procurved; pregula expanded and flush with ventral surface of head *Premnobius*
- Antennal club obliquely truncate, not strongly flattened, basal corneous portion larger, margin recurved; pregula impressed 2
- 2 (1). Scutellum conical, base of elytra at suture notched, with abundant setae *Xyleborinus*
- Scutellum moderately large, its surface flush with adjacent elytra, glabrous 3
- 3 (2). Procoxae moderately to widely separated, intercoxal piece continuous, not longitudinally emarginate *Xylosandrus*
- Procoxae contiguous, intercoxal piece longitudinally emarginate 4
- 4 (3). Posterior face of antennal club marked by two sutures on apical third; anterior face with segment two comparatively large, sclerotized, slightly recurved sutures. 5
- Posterior face of antennal club with no sutures visible at or near apex, anterior face with segment 2, if visible, not sclerotized, strongly recurved 7
- 5 (4). Posterior 1/3 of elytra narrowed or acuminate, narrowly curved behind, suture weakly to strongly emarginated *Coptoborus*
- Posterior of elytra parallel sided, broadly rounded behind; suture not emarginated. 6
- 6 (5). Posterior face of protibiae smooth. *Theoborus*
- Posterior face of protibiae rugose. *Dryocoetoides*
- 7 (4). Antennal club distinctly obliquely truncate, with segment 1 corneous, its distal margin forming a complete circle extending from anterior face to apex, suture on apical area of posterior face not visible, segment 2 on anterior face not visible 8

- Antennal club with segment 1 on both faces rounded, extending to subapical area of posterior face, segment 2 on anterior face conspicuous 9
- 8 Anterior margin of pronotum distinctly armed by several coarse serrations; body stout, <2.2 times as long as wide *Anisandrus*
- Anterior margin of pronotum unarmed by large serrations, if serrations present, smaller than asperities on anterior slope of pronotum; body more slender >2.3 times as long as wide *Xyleborus* (major part)
- 9 (7). Third segment of antennal club visible on anterior face but not on posterior face; elytral vestiture uniseriate or confused 10
- Third segment of antennal club (i.e., 2 sutures) clearly visible on both anterior and posterior face; elytral vestiture uniseriate on disc 11
- 10(9) Elytral punctures confused, vestiture abundant and confused on disc and declivity *Xyleborus* (in part)
- Strial and interstitial punctures clearly in rows, vestiture less abundant, uniseriate. *Ambrosiophilus*
- 11 (9). Pronotal asperities extending from anterior to base, asperities on disc and posterior half almost as coarse as those on anterior half; posterolateral margin of declivity rounded; elytral vestiture abundant. *Ambrosiodmus*
- Pronotal asperities confined to anterior half, posterior half of pronotum often punctate; posterolateral margin of declivity subacutely elevated from sutural apex to interstriae 7; strial and interstitial punctures in rows, elytral vestiture sparse, confined to strial and interstitial rows *Euwallacea*

***Cryptocarenum diadematus* Eggers**

(Fig. 6)

Cryptocarenum diadematus Eggers 1937: 80

Diagnosis. *Cryptocarenum* consists of 13 Neotropical species (Wood and Bright 1992b). Most are borers of twigs and small-diameter host material and are not host specific. Two other species are known from the U.S., from Florida and southern Texas. *C. diadematus* is most easily distinguished from the other species known from the U.S. by its larger size and the numerous teeth on anterior margin of pronotum.

Description. Female: Length 2.3 – 3.0 mm; approximately 2.7 times as long as wide. Color yellowish to reddish brown. Frons convex, with a low, longitudinal median elevation above upper level of eyes. Surface coarsely granulate-punctate, becoming longitudinally rugose above eyes. Frontal vestiture sparse. Anterior margin of pronotum with 14–16 teeth, approximately equal in size. Prominent gap immediately behind marginal teeth before numerous anterior rugosities begin and continue to summit. Abundant, erect, hairlike setae interspersed with asperities on anterior area. Pronotal rugosities form a distinct triangular pattern. Posterior and lateral areas of pronotum, smooth, shining. Elytra 1.7 times as long as wide, 1.6 times as long as pronotum. Sides parallel, broadly rounded behind. Elytral surface smooth, shining on disc and declivity. Strial punctures distinct but shallow, interstitial punctures weak or absent. Declivity steep, convex. Vestiture consists of sparse, erect, spatulate interstitial setae. Setae longer and more abundant on declivity, especially on odd-numbered interstriae.

Male: Similar to female in color and proportions, but smaller (1.4 mm long).

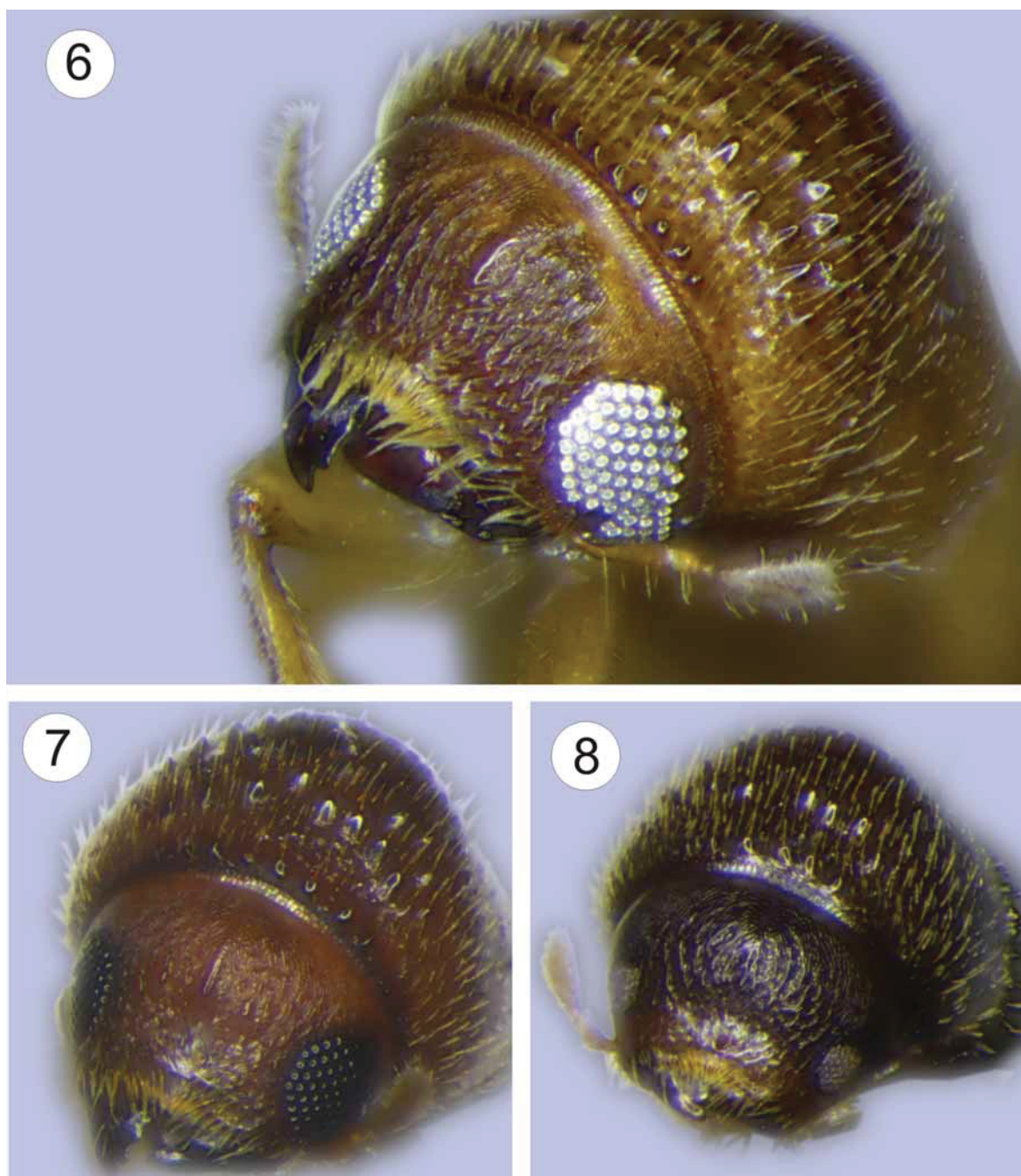
Distribution: (Fig. 9). Florida: Palm Beach Co., West Palm Beach, Pine Jog Env. Educ. Ctr., 20–IX–2003, Lindgren funnel trap baited with ethanol, S. Krantz (2, FSCA). This species is known from lowland Mexico, Central America, Jamaica, Colombia, Venezuela, and Brazil.

The following key is modified from Wood (1982).

Key to species of *Cryptocarenum* found in the U.S.

1. Anterior margin of pronotum armed with 10–24 teeth; frons convex (Fig. 6). 2.3–3.0 mm *diadematus* Eggers
- Anterior margin of pronotum armed with 5–9 teeth; frons impressed or concave above epistoma (Figs. 7, 8). 2
- 2 (1). Row of 5 longitudinally elongate tubercles at upper level of eyes; median one largest, extended dorsad (Fig. 7). 2.0–2.4 mm *seriatus* Eggers

- Frons coarsely punctate, longitudinally strigose, only 1 well defined tubercle at upper level of eyes (Fig. 8). 1.4–1.8 mm.....*heveae* (Hagedorn)



FIGURES 6–8. 6. *Cryptocarenus diadematus*, female frontal view. 7. *Cryptocarenus seriatus*, female frontal view. 8. *Cryptocarenus heveae*, female frontal view.

Acknowledgements

Photographs were taken using the photo-microscopy setup of the Florida State Collection of Arthropods (FSCA) and of the Brackenridge Field Lab (BFL), University of Texas. Paul Skelley and Mike Thomas of the FSCA, and John Abbott of the BFL provided valuable assistance with the photography. This study was funded in part by USDA–FS Early Detection and Rapid Response of Exotic Bark Beetles (07–DG–11420004–182) awarded to AIC.

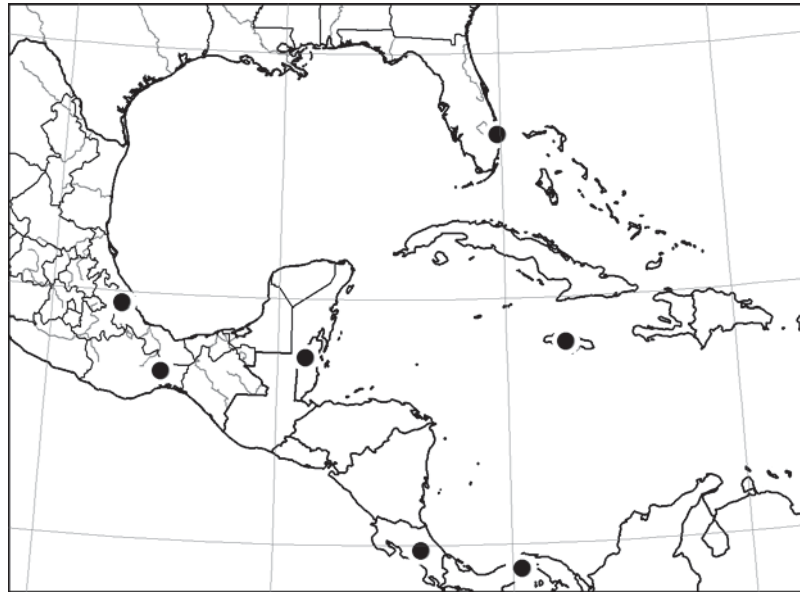


FIGURE 9. Known collection localities for *Cryptocarenum diadematus* in the Caribbean Basin. Also known from Brazil (Wood and Bright 1992b).

Literature cited

- Atkinson, T.H. (2009) A new species of *Dryocoetoides* Hopkins from southern Florida (Coleoptera: Curculionidae: Scolytinae). *Zootaxa*, 2311, 66–68.
- Atkinson, T.H. & Peck, S.J. (1994) Annotated checklist of the bark and ambrosia beetles (Coleoptera: Scolytidae and Platypodidae) of tropical southern Florida. *Florida Entomologist*, 77, 313–329.
- Atkinson, T.H., Rabaglia, R.J., Peck, S.J. & Foltz, J.L. (1991) New records of Scolytidae and Platypodidae from the United States and Bahamas. *Coleopterists Bulletin*, 45, 152–164.
- Haack, R.A. (2006) Exotic bark- and wood-boring Coleoptera in the United States: recent establishments and interceptions. *Canadian Journal of Forest Research*, 36, 269–288.
- Hulcr, J., Dole, S.A., Beaver, R.A. & Cognato, A.I. (2007) Cladistic review of taxonomic characters in Xyleborina (Coleoptera: Curculionidae: Scolytinae). *Systematic Entomology*, 32, 568–584.
- Hulcr, J. & Cognato, A.I. (2009) Three new genera of oriental Xyleborina (Coleoptera: Curculionidae: Scolytinae). *Zootaxa*, 2204, 19–36.
- Peck, S.B. (1989) A survey of insects of the Florida Keys: post-pleistocene land-bridge islands: introduction. *Florida Entomologist*, 73, 603–612.
- Rabaglia, R.J., Dole, S.A. & Cognato, A.I. (2006) Review of American Xyleborina (Coleoptera: Curculionidae: Scolytinae) Occurring North of Mexico, with an Illustrated Key. *Annals of the Entomological Society of America*, 99, 1034–1056.
- Rabaglia, R.J., Duerr, D., Acciavatti, R. & Ragenovich, I. (2008) Early detection and rapid response for non-native bark and Ambrosia beetles. *USDA Forest Service, Forest Health Protection*, 1–12.
- Rabaglia, R.J., Vandenberg, N.J. & Acciavatti, R.E. (2009) First Records of *Anisandrus maiche* Stark (Coleoptera: Curculionidae: Scolytinae) from North America. *Zootaxa*, 2137, 23–28.
- Wood, S.L. (1982) The bark and ambrosia beetles of North and Central America (Coleoptera: Scolytidae), a taxonomic monograph. *Great Basin Naturalist Memoirs*, 6, 1–1356.
- Wood, S.L. & Bright, D.E. (1992a) A catalog of Scolytidae and Platypodidae (Coleoptera), Part 2. Taxonomic Index Volume A. *Great Basin Naturalist Memoirs*, 13, 1–833.
- Wood, S.L. & Bright, D.E. (1992b) A catalog of Scolytidae and Platypodidae (Coleoptera), Part 2. Taxonomic Index Volume B. *Great Basin Naturalist Memoirs*, 13, 1–835.